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ABSTRACT

The paper examines the need for improvement in accountability and evaluation in rehabilitation programs for handicapped persons, with an emphasis on formative, or internal evaluation. Three factors significantly related to program management and accountability are explored: a client's need status, staff functions and attitudes, and outcome studies. A procedure for determining a client's need status on the basis of resource allocation (staff position and time) is offered. Possible staff functions are noted (such as training, assistance, support, and case management) and the importance of including staff attitude variables in formative evaluation is indicated. Steps in implementing a cost effectiveness analysis are outlined: (1) establishment of objectives, methods, and outcome measures; (2) implementation of a management information system; and (3) monitoring of the program. (CL)

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BENEFIT-COST ANALYSIS AND PROGRAM EVALUATION

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Dr. Thornton has presented our proposed framework for benefit-cost evaluation including the necessity to delineate clearly the program's goals, population and expectations. Once these are delineated, then summative comparisons, such as those suggested previously, can be made among programs that have similar goals, populations and expectations.

However, there is a second --albeit related--aspect of benefit-cost analysis and program evaluation. This deals with formative, or internal evaluation, that focuses on management and accountability issues related to improving a program's client outcomes and staff utilization patterns. It should surprise no one that as a program's management and accountability improves, benefit-cost analysis becomes both feasible and desired.

In today's presentations, I would like to focus our thinking on three factors that we have found to be significantly related to program (or resource) management and accountability. These three factors include:

1. A client's need status. I will suggest to you that if one defines a client's need status on the basis of resource allocation (i.e., staff position and time), then it becomes possible and relatively easy to validly relate client characteristics to program costs and outcomes.

2. Staff functions and attitudes. Most (re) habilitation programs are what their staff do. Hence, any valid program evaluation must consider

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staff functions (as opposed to job descriptions) and how staff attitudes towards their jobs effect programmatic outcomes.

3. Outcome studies. Program evaluation and benefit-cost analysis must focus on outcome, not process variables. One solution to the problem frequently faced in (re)habilitation services for quantifying outcome measures is to focus on non-monetary outcomes, such as skill acquisition and client movement, that reflect a program's effectiveness. From a formative evaluation perspective, I will share data from a number of outcome studies that relate a client's need status level, staff functions, and staff attitudes to the following programmatic outcomes: Clients' skill acquisition and movement indices and wages earned.

A. A Client's Need Status

Program administrators who are unhappy with their programmatic outcomes frequently lack a way to relate outcomes to client characteristics. This inability results from factors such as different client assessment systems, "client need" (in which everyone needs everything), and an inability to compare a client's need status from one program to another. We have begun to overcome these problems by measuring and defining a client's need status on the basis of resource allocation--that is, staff position and time. The procedure for determining a client's needs status is outlined in Figure 1.

Refer to Figure 1

Once one has a standard measure of client need, then it is possible to relate this variable to a number of desired outcomes from any one of

Figure 1: CLIENT NEED STATUS RATING SCALE

Procedures:

1. Evaluate the client. Three staff (case management, training and residential) independently evaluate the client on the 10 behaviors listed below.
2. Determine Need Status. Use the average scores for the three raters per characteristic.
   a. Evaluate on the first 5 behaviors. If the average score across the 5 behaviors is 2.00 or above, the client is a High Need person.
   b. If the client's average score for the first 5 behaviors is below 2.00, evaluate on the next 5 (#6-#10). If the average of the 10 scores is 1.4 or above, the client is a Moderate Need person.
   c. If the client's average score from 2b is below 1.4, the client is a Low Need person.

Client Characteristic	Definitions	Current Level of Client's Behavior
HIGH NEED INDICATORS		
1. Toileting	-involves bowel and bladder control	(1) Independent (2) Prompts (3) Assistance (4) Does Not Do
2. Hygiene	-body care including bathing, grooming & health related activities.	(1) Independent (2) Prompts (3) Assistance (4) Does Not Do
3. Threatening/ Violence	-verbal or physical threats to do harm to self, others or objects.	(1) None, or less than one incident a month (2) One or two incidents per month (3) One or more per week (4) One or more daily
4. Disrupting	-interferes with others' activities through behaviors such as damages own or others' property, uses profane or hostile language, or persistently pesters, irritates, whines or teases.	(1) (2) (3) (4)
5. Hyperactivity	-excessive physical movement including bounces up & down in chair/place continuously, in & out of chair/place workstation continuously, moves about area continuously in a moderate or fast-paced manner, and/or moves around area continuously in a seemingly random & very rapid manner.	(1) (2) (3) (4)
MODERATE NEED INDICATORS		
6. Speech	-speaks in a recognizable language or uses a formal symbolic substitue such as finger spelling or American Sign Language.	(1) Normal or Intelligible (2) Impaired (3) No Expressive Language
7. Feeding	-ingesting food and/or beverages.	(1) Independent (2) Prompts (3) Assistance (4) Does Not Do
8. Dressing	-Putting on & removing regular articles of dress (skirt, blouse, shirt, pants, dress, shoes, stockings, underwear)	(1) Independent (2) Prompts (3) Assistance (4) Does Not Do
9. Uncooperative	-rebellious, untrustworthy, unmotivated, or doesn't follow directions	(1) None, or less than one incident a month (2) One or two incidents per month (3) Once or more per week (4) Once or more daily
10. Stereotypic	-engages in repetitive behavior that has no apparent function (eye-poking, rocking, hand & finger movements).	(1) (2) (3) (4)

the vocational training-placement environments: Sheltered Workshop, Work Training Stations In Industry, or Competitive Employment. Some of our recent work in this regard is summarized in Table 1 that relates a number of client

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Refer to Table 1

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characteristics to program outcomes. Note that a client's need status is significantly related to client movement in vocational training-placement, but not related to one's skill acquisition index. Note also (in footnote "e") that the higher a client's need status, the lower is that person's tested intelligence and program duration. Each of these datum can be used by management to account for programmatic outcomes.

B. Staff Functions

Both formative and summative program evaluation must include the influence that staff have upon programmatic outcomes. This section outlines first, how one can delineate functionally what staff do, and second, how staff functions vary across client need status and the three levels of vocational training-placement that we are focusing on today. For those interested, an earlier presentation today summarized the procedures for "costing out" these staff functions.

Table 2 summarizes a number of possible staff functions. Units of

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Refer to Table 2

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service become the common measuring and costing unit when these staff functions are measured in time blocks (typically 15 minutes). Once functions

Table 1

CLIENT CHARACTERISTICS AND OUTCOME MEASURES

Client Characteristic	Outcome Variables			
	CLA/CMI[a]	VT/CMI[a]	CLA/SAI[b]	VI/SAI
Gender				
Females (N=68)	2.4[c] (.17)[d]	1.5(.13)	.01(.01)	.03(.01)
Males (N=76)	2.0(.13)	1.8(.17)	.01(.01)	.03(.01)
Age				
20-30 (N=64)	2.2(.14)	1.6(.15)	.01(.01)	.04(.01)
31-40 (N=34)	2.2(.27)	1.8(.22)	.02(.01)	.03(.01)
41-50 (N=19)	1.9(.21)	1.7(.37)	.01(.01)	.05(.02)
50-64 (N=27)	2.6(.26)	1.7(.30)	-.02(.01)	.00(.02)
Intelligence				
20-49 (N=50)	1.9(.16)	1.3(.08)	.02(.01)	.03(.01)
50-69 (N=90)	2.3(.14)	1.8(.16)	.01(.01)	.03(.01)
70-89 (N=4)	3.0(.41)	2.3(.25)	.04(.03)	.07(.01)
Need Status[e]				
Low (N=53)	2.5(.20)	2.0(.19)	.01(.01)	.03(.01)
Medium (N=64)	2.1(.13)	1.6(.17)	.01(.01)	.03(.01)
High (N=27)	1.7(.22)	1.2(.07)	.02(.01)	.02(.01)

[a] Number of Community Living Alternative (CLA) or Vocational Training-Placement (VT) progressions since entered Mid-Nebraska program.

CLA: 1 = Supervised
2 = Supervised ⟶ Semi-Independent
3 = Supervised ⟶ Semi-Independent ⟶ Independent

VT : 1 = Sheltered Workshop
2 = Sheltered Workshop ⟶ Transitional Training/Employment (W.T.S.I., O.J.T.)
3 = Sheltered Workshop ⟶ Transitional Training/Employment ⟶ Competitive Employment

[b] Skill Acquisition Index (SAI)

$$SAI = \frac{\text{Number of Skills Gained/Time Period}}{\text{Number of SKills in The Domain}}$$

[c] Mean

[d] Standard error of mean

[e] Pearson Product-Moment Correlations between a client's need status and other client characteristics included:
(1) gender (r = -.06)
(2) age (r = .14)
(3) WAIS Full Scale IQ (r =-.50)*
(4) program duration (r = -.20)*

Table 2

STAFF FUNCTIONS AND UNITS OF SERVICE

1. Training. A training unit of service encompasses those units delivered in running a direct training program either in the training center or in the client's living or work environment (that is, training can occur in any environment). A training unit of service is:
   1) fifteen minutes of one on one program running.
   2) thirty minutes of 2 or 3 clients to one instructor.
   3) one hour of 4 or more to one.

2. Assistance. An assistance unit of service encompasses those activities whose purpose is to facilitate skill maintenance and/or generalization. The intent of assistance units is not to run habilitative training programs, but to provide the assistance necessary to insure a client's success in his/her current placement. An assistance unit of service is:
   1) 15 minutes of one to one assistance.
   2) 30 minutes of 2 to 3 clients to one "facilitator assistant."
   3) 1 hour of 4 or more to one.

3. Support. A support unit of service encompasses those activities performed for the client. The intent of support units is to do the task for the client that he/she cannot do, or has not been able to learn, but is still required by the client's current environment. A support unit of service is 15 minutes or any portion thereof.

4. Supervision. A supervision unit of service is time spent monitoring clients. It encompasses the supervision of those clients in the sheltered workshop/center industry, time spent in accompanying a client to his personal appointments, or time spent in recreational and community activities. Its intent is to supervise and monitor, not to provide skill training, assistance or support. A unit of supervision is:
   1) fifteen minutes of one on one supervision.
   2) thirty minutes of 2 or 3 clients to one supervisor.
   3) one hour of 4 or more to one.

5. Case Management. A case management unit of service is defined as 15 minutes of actual contact with the client or 15 minutes expended by case management on behalf of the client. This would not include time spent accompanying a client to his appointments unless circumstances necessitated the presence of his case manager.

6. Transportation. A transportation units of service is the provision of transportation to and from the ADC or to and from work. It is not intended to cover transportation provided in terms of Case Management Units.

and times are standardized, then evaluation or monitoring activities can occur. For example, Figure 2 summarizes how documented units of service

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Refer to Figure 2

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vary across staff functions and client need level. These data are from 144 clients within the Mid-Nebraska program who are in semi-independent living arrangements (group homes, supervized apartments, or transitional living units) and sheltered workshop/prime manufacturing program components. High need clients are receiving a total of 15.7 units of service per day; moderate, 9.1; and low need, 11.4 units per day. In reference to staff utilization patterns, one staff can provide according to our studies to date 26½ units of service per day; thus, a program administrator needs to provide 1 staff for every 1.7 high need clients, but can use a 2.9 ratio for moderate need, and a 2.3 client/staff ratio for low need clients and still provide the same level of programmatic services.

Figure 3 reflects types of units of service across the three vocational

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Refer to Figure 3

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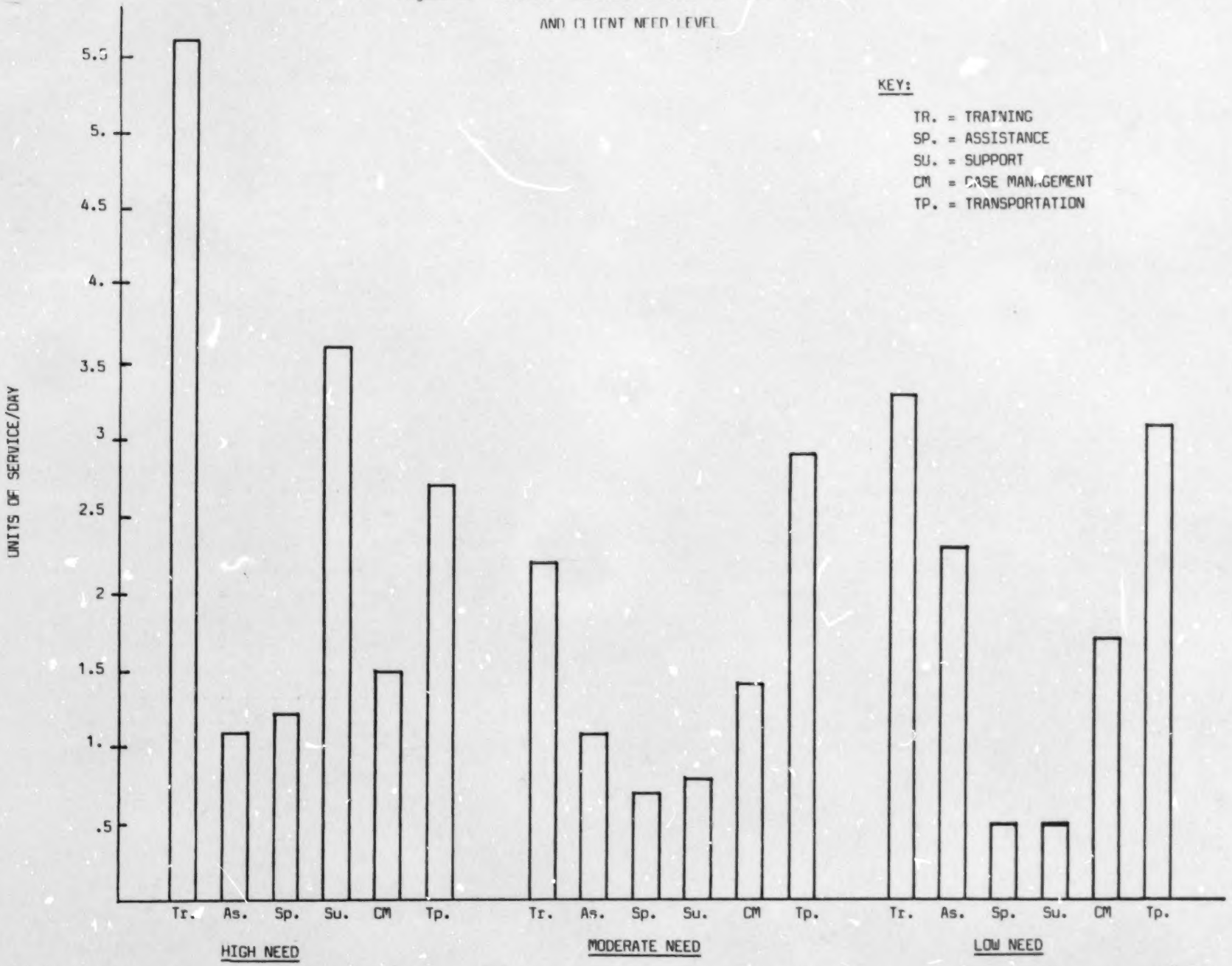
environments of Sheltered Workshop, Work Training Stations In Industry and Competitive Employment. It is interesting to note that these five types, which include training, assistance, support, supervision, and transportation, vary significantly across training-placement settings. These data would be very useful in effectively utilizing staff across settings by providing only those units required in the setting. The administrator could also "cost

Figure 2: UNITS OF SERVICE RELATED TO STAFF FUNCTIONS AND CLIENT NEED LEVEL



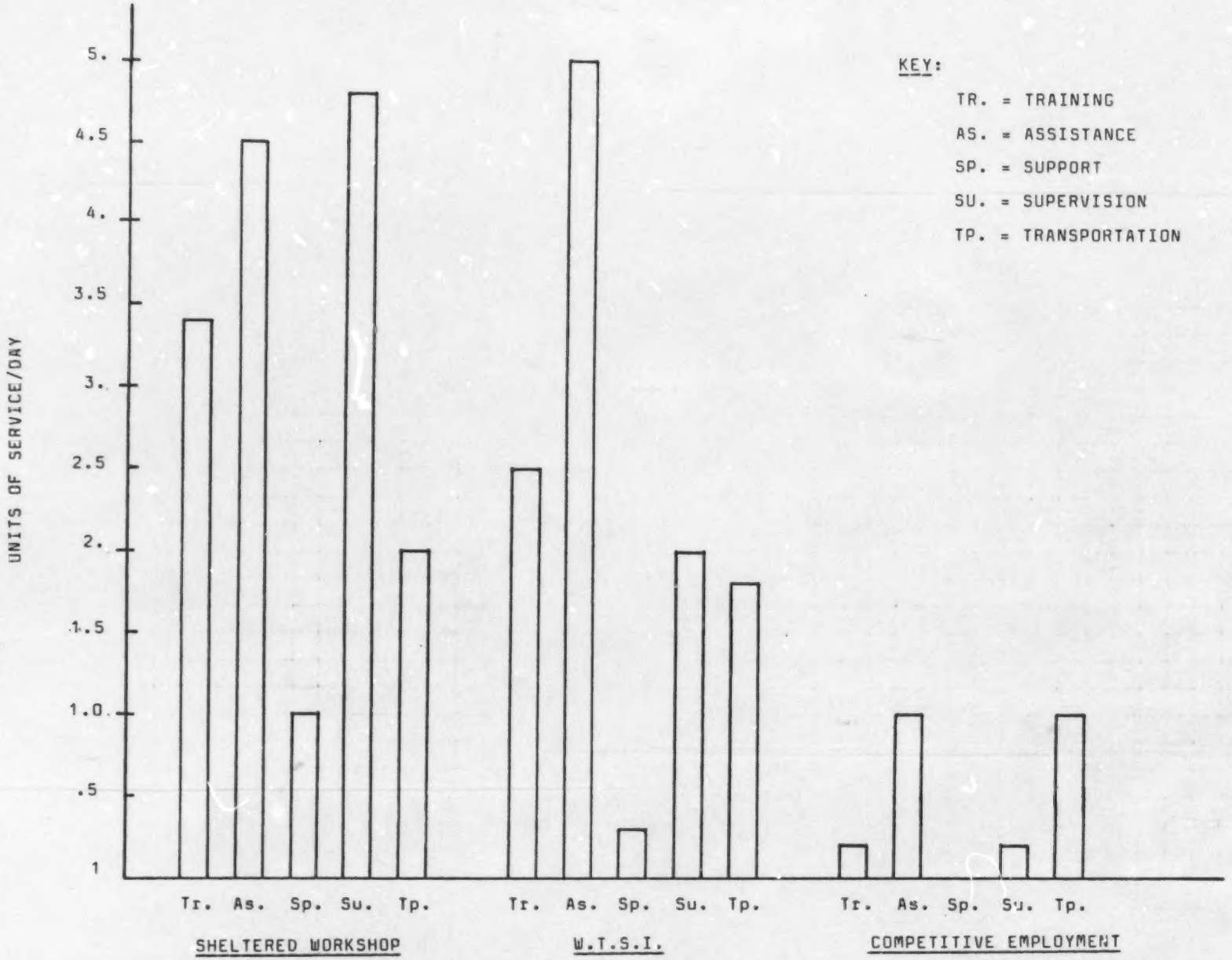


Figure 3: UNITS OF SERVICE RELATED TO VOCATIONAL TRAINING-PLACEMENT ENVIRONMENTS

out" providing services in each of these environments. For example, assume the following costs per unit: Training = $3.00, assistance = $2.50, support = $2.25, supervision = $1.50, case management = $3.00, and transportation = $2.10. Using these unit costs, then programmatic costs per client per day would be $35.10 in a sheltered workshop, $26.96 per day in a work training station in industry, and $5.50 per day in competitive employment. These data are useful both for formative evaluation activities, such as effectiveness cost analysis, and program planning related to contracting for particular services, "brokering out" particular services, and budgeting for necessary follow-along activities.

C. Staff Attitudes

If staff salaries account for 80 percent of a program's budget, they should be considered in evaluating its outcomes. We have recently completed a study in Nebraska determining, among 485 professional staff, the correlation between their measured attitude towards 15 job dimensions and client outcomes within 22 community based mental retardation programs. Outcome data, including wages per month and movement within vocational and community living alternatives, were available on 745 adult clients. The staff opinion survey presented as Figure 4 used a 4-point Likert scale to have each staff member

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Refer to Figure 4

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rate his/her attitude towards the 15 core job dimensions. The following assessed attitudes significantly predicted client outcomes: Task identity, autonomy, challenge, contact, participation and advancement. It is interesting that no client characteristics, except intelligence, significantly predicted these same client outcomes.

Figure 4: STAFF OPINION SURVEY[a]

Directions: Circle the description that best explains your current attitude about each job dimension listed in the left column.

Staff Component (Circle):
1. Administrative/Support/Fiscal
2. Assessment/Training
3. Case Management
4. Residential

Job Dimension	Definition	Evaluation of Current Attitude Towards Job Dimension			
		(4) Very Satisfied/ Fulfilled	(3) Generally Satisfied/ Fulfilled	(2) Generally Unsatisfied/ Unfulfilled	(1) Very Unsatisfied/ Unfulfilled
1. Variety	The extent to which the job involved change and variety in responsibilities and procedures.	(4)	(3)	(2)	(1)
2. Autonomy	The extent to which the job permits independent thinking and acting.	(4)	(3)	(2)	(1)
3. Challenge	The extent to which the job allows the employee to test his or her ability and to achieve optimally difficult tasks.	(4)	(3)	(2)	(1)
4. Task-Identity	The extent to which the job allows employees to work on a project from its planning until its completion, to work with a case or client from referral to termination, or to be involved in many aspects of service provided to client.	(4)	(3)	(2)	(1)
5. Feedback	The extent to which job yields results that the employee can see.	(4)	(3)	(2)	(1)
6. Participation	Amount of employee involvement in planning future programs & in making administrative decisions affecting large part of organization.	(4)	(3)	(2)	(1)
7. Information	The extent to which the employee is kept informed about decision, plans & activities affecting the job.	(4)	(3)	(2)	(1)
8. Learning	Amount of opportunity for employee to learn new techniques and approaches.	(4)	(3)	(2)	(1)
9. Contact	Opportunity for informal contact with other employees.	(4)	(3)	(2)	(1)
10. Skills Development	The amount of training in techniques to allow you to do your job more effectively.	(4)	(3)	(2)	(1)
11. Time	The amount of time allowed to complete job assignment.	(4)	(3)	(2)	(1)
12. Salary	The amount of compensation received for work performed.	(4)	(3)	(2)	(1)
13. Benefits	Compensation other than salary i.e., holidays, vacation sick leave, health insurance, retirement.	(4)	(3)	(2)	(1)
14. Advancement	Promotion to a position of more responsibility.	(4)	(3)	(2)	(1)
15. Appraisal	A review of the quality of employee performance & improvement.	(4)	(3)	(2)	(1)

[a] Adapted in part from Chernis, 1980; Hackman and Oldham, 1976.

The importance of including these staff attitude variables in formative evaluation and staff development efforts cannot be overlooked.

D. Outcome Studies

Rehabilitation programs are frequently reluctant to relate outcome to cost, or to implement a cost-effectiveness approach to program evaluation. This is because in part rehabilitation programs have emphasized historically the needs of their clients rather than the cost or effectiveness of those services. Neither are program administrators generally enthusiastic about evaluation, since many perceive it as an externally imposed requirement for which there is neither adequate preparation nor sufficient funding, while others feel that it is insensitive to either their program's complexities or client characteristics (Attkisson & Broskowski, 1978). In addition, many rehabilitation agencies have only one center and do not consider themselves part of a continuum of services; thereby they typically use their own approach to assessment, training and program evaluation. This situation makes agency or system-level comparisons impossible, but should not prevent outcome studies from being conducted that will provide important formative evaluation data. The emerging measurement methodologies that involve effort accomplishment are consistent with this suggested need for outcome studies. These methods link monetary input to non-monetary output measures. The advantage is that client benefits do not have to be monetized, only the costs (Levin, 1975; Rossi et al., 1979). Three of the most important steps involved in implementing cost-effectiveness analysis are outlined below. Successful implementation of the steps will result in behavioral change and client movement units to which time and cost can be attached.

1. Establish objectives, methods and outcome measures. Rehabilitation goals can be translated into objectives that are clearly delineated, measurable,

and congruent with the methods and service provided. One of the most difficult questions in this regard to answer is, "What should our program outcomes be, and how can we measure them?" Table 3 presents a number of possible outcome

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Refer to Table 3

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measures that are pertinent to vocational training-placment programs, regardless of whether they relate to sheltered workshops, transitional training-employment, or competitive employment.

2. Implement a Management Information System (MIS). The agency-level MIS should provide client change and service indicators such as client's need status level, type of services received, amount of services, who delivered the service, and direct/indirect service costs (Carter & Newman, 1976). Systems-level MIS components should focus on client demographics such as available living-training placements and tracking client movement through sequential living-training programmatic progressions (Schalock, 1983).

3. Monitor the program. Agency and systems-level monitoring is an essential step in formative program evaluation since it assures that programs are reaching appropriate target populations and that services delivered are consistent with program design specifications (Attkisson, Brown & Hargreaves, 1978). Monitoring can also increase program accountability (Rossi, et al., 1979); supplement impact assessment since "the failure of programs often is due to faulty or non-implementation of interventions rather than ineffectiveness of the treatments" (Rossi & Wright, 1977); and provide data to help decide whether or not to continue ongoing programs (Ciarlo, 1977).

An internal monitoring system insures program standardization and valid

Table 3

VOCATIONAL TRAINING-PLACEMENT ALTERNATIVES/PROGRESSIONS

Training-Placement Alternative	Environment	Service Functions	Goals	Client Outcomes
Sheltered Workshop (Training for Employment)	Sheltered Workshop Prime Manufacturing	Training Assistance Supervision Support	Skill Acquisition Increased Productivity Work Experience Movement	Skill Acquisition Client Wages Hours Worked/Types of Jobs Movement to Transitional Employment or Supportive Work
Transitional Training-Employment	Work Training Stations On The Job Training	Training Assistance Supervision	Employ workers in Work Training Sites In Industry Maximize workers' earnings Provide a least restrictive & integrated work environment Provide work opportunities in a variety of occupational areas Maximize job placements Maximize trainee job skills	1. average number per month 2. number in full & part time employment 3. total hours worked per month 4. average hourly wage 5. average percentage of competitive norms 6. number of preferred interest/occupations represented 7. number of workers in each of the following occupational areas: a) farm, b) manufacturing, c) retail trade, d) services 8. number entering competitive employment 9. number of job skills mastered 10. increased person-environment congruence
Competitive Employment (Supported Work)	Part/Full Time Employment	Assistance	Maintain Placement	Job Retention Average hourly wage Duration of employment

outcome measures. The authors have developed and implemented over the last seven years an internal monitoring process, referred to as Systems Review, which is conducted in all program components every six months to insure proper documentation, competencies, and adherence to administrative and personnel policies. The review process involves the following six steps (Schalock, 1983): (1) operationalize the variables (input, process or outcome) to be monitored; (2) link the selected variables to data within the Management Information System; (3) define when and how data will be gathered and the party of entity from which it will be obtained; (4) establish judgment criteria for acceptance or rejection of evidence in relation to each variable; (5) conduct the activities specified in steps 3 and 4 onsite; and (6) interpret the data and specify the necessary action or correction strategy. Note that Systems Review is an internal, self-correcting procedure analagous to process evaluation that assesses activities related to target identification or project conformity (Rossi, Freeman & Wright, 1979; Wildavsky, 1972). It does require managerial and/or fiscal clout. Systems Review is different from an external program audit such as those conducted for accreditation or licensure surveys. These audits evaluate a program's compliance with a set of external standards, result in summative evaluation statements (accredited/nonaccredited), and generally do not address outcome measures such as those summarized in Table 2.

In summary, formative program evaluation cannot be separated from program management and accountability issues. Program evaluation should result in better client services, more efficient program management and improved documented results. It is apparent that although the government spends billions of dollars for rehabilitation services, it has not come close to approximating

the accuracy of the insurance industries' actuarial technology and data involved in determining the actual cost of the disability and the financial resources required to offset that cost and realize a profit. This obvious omission of the utilization of available technology, coupled with a de-emphasis in the client and vendor's role in the rehabilitation process, has created accountability problems affecting political support and the allocation of increasingly limited resources.

We have stressed in today's presentation that both single agencies and larger service delivery systems need to improve their evaluation and accountability activities. Both the vendor and the funding/regulatory agency in today's world of rehabilitation have primary roles to play. Vendors should use their preferred methods to develop behavioral skills that are the small steps toward the client's movement into environments that are less restrictive and more productive. The funding/regulatory agencies should focus on the larger steps, and insure the necessary living-training progressions required to match a client with an environment that is congruent with the person's behavioral skill level. Both steps are necessary for valid benefit-cost analysis, program evaluation, and developing reasonable prognoses regarding the time and cost involved in a person's habilitation.

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